325.1
Ent

UNITED STATES DEPARTMENT OF AGRICULTURE

BUREAU OF ENTOMOLOGY AND PLANT QUARANTINE

RMO

Project | Date | Author

TITLE

FOREST INSECT SURVEY OF
THE STIRLING CITY p LAKE ALMANOR INFESTATION AREAS
LASSEN AND PLUMAS NATIONAL FORESTS

September 1941

SB
~~Annex~~ 1
763
.C2 L3
1941 a

By
K. A. Salman
Berkeley, California
October 7, 1941

U. S. GOVERNMENT PRINTING OFFICE 8—9742

SUBJECT—

INDEX NO.—

Forest Insect Laboratory
Berkeley, California
October 7, 1941

FOREST INSECT SURVEY OF THE STIRLING CITY - LAKE ALMANOR INFESTATION AREAS LASSEN AND PLUMAS NATIONAL FORESTS

September 1941

APPROVED BY:

J. M. MILLER
Senior Entomologist, In Charge

SUBMITTED BY:

K. A. SALMAN
Entomologist

FOREST INSECT SURVEY OF
THE STIRLING CITY - LAKE ALMANOR INFESTATION AREAS
LASSEN AND PLUMAS NATIONAL FORESTS

September 1941

EXTENT AND TYPE OF SURVEY

The area covered by the 1941 survey and the methods used in securing that coverage were the same as those of the 1940 survey[1/]. The gross area is some 370,000 acres lying between the western fringe of ponderosa pine timber between Mill Creek on the north and the North Fork of the Feather River on the south and extending eastward to the shores of Lake Almanor and the boundaries of Indian Valley. The methods used in the survey were (1) general reconnaissance and (2) samples consisting of (a) 183.7 miles of road cruise strip covering 14,696 acres of the same area covered in 1940 and (b) a loss cruise on the 320-acre Onion Butte plot in the north half of section 15, T 27 N, R 3 E.

GENERAL INFESTATION CONDITIONS

Relatively large acreages in both infestation areas already are cutover, carrying reserves of only the youngest, thriftiest pine trees and many mature and overmature firs. Three major logging operations and several smaller ones are currently increasing the cutover acreage so that the situation as it concerns the balance between cutover and virgin stand acreages is changing rapidly. For that reason no total estimates for individual units have been attempted.

Cutover Areas

On cutover areas pine infestations are light, largely because of the age and thrift of the reserve stands. However, white and red fir reserves, which are heavier and for the most part result from but a light or no cutting of those species seem to be deteriorating rapidly. In particular, the cutover stands in the vicinity of Deer Creek Meadows (Area A on the map) and east to near Chester, have suffered relatively heavy losses this season. In addition numerous top-killed trees occur, 52 having been counted on Strip #2 of the Lake Almanor infestation area alone.

1/ Carlson, S. T. Forest insect survey report of Stirling City and Lake Almanor infestation areas, Lassen and Plumas National Forests, September 1940. Berkeley Station Report. October 3, 1940.

No other significant losses were seen or measured in cut-over reserve stands and it is believed that as a whole losses are at a much lower level than was recorded by the 1940 survey.

In second growth pine stands near the lower margins of timber type extensive cutting of piling has occurred during the past season. In but one area heavy cutting and the leaving of slash had resulted in the infestation of adjacent 10 to 15 foot reproduction on about a half acre. No other infestations resulting from these piling operations were encountered on the area.

Virgin Areas

With few exceptions infestations in virgin stands also show markedly decreased insect activity this season. However, it must be kept in mind that additional loss, which could not be seen by such an early fall cruise, may change the picture to some extent.

In ponderosa and Jeffrey pine a few widely scattered and small group infestations were encountered on the strips, seen on the survey area, or examined on the survey plot. However, such groups did not appear to be a dominant characteristic of the 1941 infestation. In general, scattered infested pine trees, often of the smaller codominant types and many of which previously had been injured by what appeared to be a snow break of the 1940-1941 winter season, constituted the major portion of the ponderosa and Jeffrey pine loss. The plot results (Table 1) indicate a 45 percent reduction in loss which may, however, be nearer to 30 percent when the remainder of the 1941 seasonal losses are cruised next fall. Strip cruise results, when compared to previous estimates, indicate a larger reduction in loss may be typical of the two infestation areas as a whole. However, the variability of the cruise results is so great that any accurate comparison is difficult to make.

Infestation conditions in sugar pine are similar to those in ponderosa and Jeffrey pine. Snow broken trees and trees of smaller diameter predominate in the loss picture. A few groups were seen in most of which at least one tree had had the top broken out and presumably helped to start the group infestation.

In all three of the pine species, few overwintering broods were encountered, yet practically all of the broods had emerged from the summer trees. It may be possible that an appreciable infestation is now present in green trees that were not disclosed by the survey. However, it is my impression that overwintering brood trees will be relatively few in number and that a low pine bark beetle population level exists in the pine stands of both infestation areas.

In white and red fir the general impression, partially borne out by the strip results, is that fir infestations are heavier this season, particularly on cutover areas. For the most part mature or overmature decadent trees are involved. However, the plot cruise and strip cruise results cannot be accepted without question for in such trees the ultimate complete infestation and death usually is the result of a succession of attacks over a period of several years. Thus the volume loss of this year also represents to a considerable extent the activities of fir infesting bark beetles for several years and cruising methods available for use in fir stands are not entirely an accurate yardstick of current insect activity.

The Douglas fir beetle remains active in three centers, all of which are shown on the maps accompanying this report. One is in the Deer Creek Canyon on the Stirling City infestation area. The other two are on the Lake Almanor infestation area near Longville and Senaca. In all of these infestation centers groups of trees were killed in 1939 and 1940. These groups have been enlarged, often considerably enlarged, by 1941 attacks on adjacent trees. In addition, new infestation nuclei have resulted from 1941 attacks in other parts of the stands. Apparently this type of infestation, which is relatively new in this area, is continuing with little or no lessening of intensity and considerable volume loss can be expected. No apparent selection of the larger or overmature trees is evident and the insects apparently kill almost any type of tree within the zone of their activity.

GENERAL LOSS ESTIMATES

The location of losses and centers of losses are reflected fairly well for the areas sampled by the strip survey per acre loss figures. These are given in Table 2. Additional reconnaissance work gave no indication that the conditions on the strips were markedly different from those occurring in other portions of the two infestation areas. Variations in the results can be expected to be those of actual variations in infestation intensity and differences in environment and condition of management. Thus their extension on a broad basis seems justified (Table 3) and the estimate of nearly sixteen million board feet of loss on the two infestation areas seems to be reasonable and conservative. 1941 losses on the Stirling City area are estimated to be about 30 percent lower and those for the Lake Almanor area about 50 percent less than the 1940 loss estimates for the same areas.

RECOMMENDATIONS

Measures to utilize high risk trees and improve the thrift of pine stands in the area are being considerad by two of the largest timberland operating companies in the area. This indicates satisfactory progress in forest insect control, for in these types of west side stands, the unpredictable loss factor is important and a willingness to operate to reduce the less important predictable loss under such conditions represents a commendable attitude on the part of the operators.

In connection with management of these stands the fir volume left as reserves may well be a future problem if decadence and death of fir reserves on cutover lands continues. At this time it may be advisable to consider the management of these elements of the stands so that a high utilization of resources may be obtained and future losses may be prevented.

TABLE 1. Measured Loss, Onion Butte Plot (North Half Sec. 15, T 27 N, R 3 E.)

Tree Species	1939 Loss		1940 Loss		1941 Loss*	
	Trees	Volume b.m.	Trees	Volume b.m.	Trees	Volume b.m.
Ponderosa pine	22	62,000	12	30,080	15	16,540
Sugar pine	35	86,000	27	28,890	20	22,660
Red and White firs	16	24,000	18	25,310	17	14,780
Incense cedar	-	---	1	1,000	-	---
Douglas fir	1	3,000	1	1,000	-	---
Totals	74	175,000	59	86,280	52	53,980
Per Acre		547		270		169

* Final 1941 loss cannot be determined until all infested trees become evident through fading or other indications of attack. These figures are actual cruised loss as of September 1941. It can be expected that additional infested trees will be picked up during the 1942 cruise.

TABLE 2. Losses cruised on road strips. Season of 1941.

Strip	No. Miles in Strip	Measured Loss - B.M. per acre					
		PP & JP	SP	WP & RP	DF	Other	Total
Stirling City Infestation Area							
1	1.4	68.4	--	15.9	--	--	84.2
2	5.3	2.3	2.2	33.5	--	--	38.0
3	10.0	24.4	0.8	6.0	9.2	0.8	41.3
4	10.0	23.0	8.2	23.5	17.9	1.2	73.8
5	8.1	2.4	36.7	19.7	15.1	--	73.8
6	10.0	8.4	1.2	14.3	--	--	23.9
7	8.0	19.9	42.6	5.7	--	--	68.3
8	4.7	--	--	--	--	--	0.0
9	6.4	1.3	0.4	28.6	--	--	30.3
10	10.0	6.9	19.1	23.8	--	--	49.9
11	10.0	12.3	0.9	0.2	--	--	13.4
12	8.0	27.1	1.0	8.7	0.4	--	39.7
13	8.0	15.2	2.2	21.0	--	--	38.5
14	8.0	5.1	4.9	13.6	9.8	--	33.4
15	7.9	1.4	1.7	10.9	--	--	14.0
16	5.0	21.3	--	35.4	--	--	56.7
Average & totals	120.8	12.6	8.5	15.5	3.9	0.2	40.8
Lake Almanor Infestation Area							
1	9.6	17.3	0.2	20.3	--	0.5	38.5
2	10.0	3.7	--	84.5	--	--	88.2
3	7.0	39.3	0.1	75.6	37.4	--	152.4
4	4.2	0.0	3.5	14.5	10.5	--	38.4
5	8.5	1.4	3.2	11.9	0.9	--	17.4
6	11.6	0.8	3.0	6.8	17.2	0.3	28.0
7	8.0	6.0	--	2.4	4.1	--	12.6
8	4.0	--	10.6	31.2	--	--	41.7
Average & totals	62.9	9.4	1.9	31.1	8.7	0.1	51.2

TABLE 3. General Estimates of 1941 Losses

Tree Species	Losses Cruised on Strips, b.m.	Strip Losses Extended to Entire Infestation Area m.b.m.
Stirling City Infestation Area (232,000 acres) Sample - 9,664 acres		
Ponderosa pine	121,480	2,916
Sugar pine	82,650	1,984
White and Red firs	150,130	3,603
Douglas fir	38,010	912
Incense cedar	1,640	39
Total pine loss	204,130	4,900
Total fir loss	188,140	4,517
Total loss	393,910	9,456
Lake Almanor Infestation Area (134,000 acres) Sample - 5,032 acres		
Ponderosa pine	47,170	1,256
Sugar pine	9,820	261
White and Red firs	156,340	4,162
Douglas fir	43,660	1,163
Incense cedar	720	19
Total pine loss	56,990	1,518
Total fir loss	200,000	5,326
Total loss	257,710	6,862

LEGEND FOR MAPS

Road Strip Locations

Road Strip Numbers

Infestation Areas

Douglas Fir

White Fir

UNITED STATES DEPARTMENT OF AGRICULTURE

BUREAU OF ENTOMOLOGY AND PLANT QUARANTINE

FOREST INSECT LABORATORY— BERKELEY, CALIFORNIA

FOREST INSECT SURVEY

STIRLING CITY INFESTATION AREA

MT. DIABLO MERIDIAN

SCALE

LEGEND

UNIT BOUNDRY

N

T.28 N.

T.27 N.

T.26N.

T.25N.

T.24N.

T.23N.

T.22N.

R.2E.

R3E.

R.4E.

R.5E.

10'

50'

40° 00

40'

121° 30'

DEER CREEK

ONION BUTTE

BUTTE MEADOWS

POLK SPRINGS

BELLVILLE

CAMPBELLVILLE

INSKIP CHANCE

KEEFER

CLONE

PINE

STIRLING

BAR

RAMSEY

FLEA VALLEY

PARADISE

LAST

Round Val.

Deer Creek Meadows

Buff Mtn.

Onion Butte

Ruffa Ridge

Eagle Rocks

Humboldt Summit

Humboldt Peak

Golby Mtn.

Flat Iron Mtn.

Sugar Loaf

McCarthy Point

Mill Creek Rim

Black Rock

Stone Coral Hollow

Boatgunwale

Polk Springs

Jonesville

Humbug Summit

Chico Meadows

Ike Dye

Soda Springs

Butte Meadows

Iron Mtn.

Cirby Meadow

Devils Kitchen

Digger Pine Flat

Steamboat Mtn.

Cold Spring Hill

Bull Hill

Chaparral

Spring Valley Mtn.

Brushy Mtn.

Promontory Pk.

West Branch

Inskip

Table Mtn.

Potato Patch

Crane Valley

Bald Mtn.

Crowellton

Forks of Butte

Stirling City

Ramsey Bar

Sugar Loaf Merlin

Meadtown

De Sabla

Centerville

Appleton

Nimshew

Flea Valley

Flea Mtn.

Mayara

Bear Ranch Hill

Magalia

Sawmill Pk.

Paradise

Concow Resvr.

Big Bar Mtn.

Pulga

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16

UNITED STATES DEPARTMENT OF AGRICULTURE

BUREAU OF ENTOMOLOGY AND PLANT QUARANTINE
FOREST INSECT LABORATORY -- BERKELEY, CALIFORNIA

1940

FOREST INSECT SURVEY

LAKE ALMANOR INFESTATION AREA

MT. DIABLO MERIDIAN

SCALE 0 ½ 1 2 3 4 Miles

Legend

UNIT BOUNDRY

T29N

T28N

T27N

T26N

T25N

R4E.

R5E.

R6E.

R7E.

R8E.

R9E.

20'

10'

40° 00'

121°30'

121°00'